CALIFORNIA STRATEGY TO REDUCE PETROLEUM DEPENDENCE
Program Plan

Prepared by Arthur D. Little
for the
California Air Resources Board
and
California Energy Commission

December 2001

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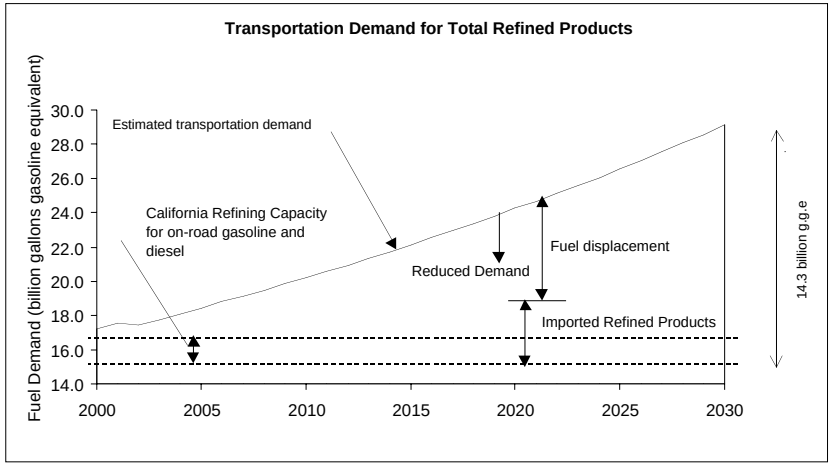
Introduction and Problem Definition

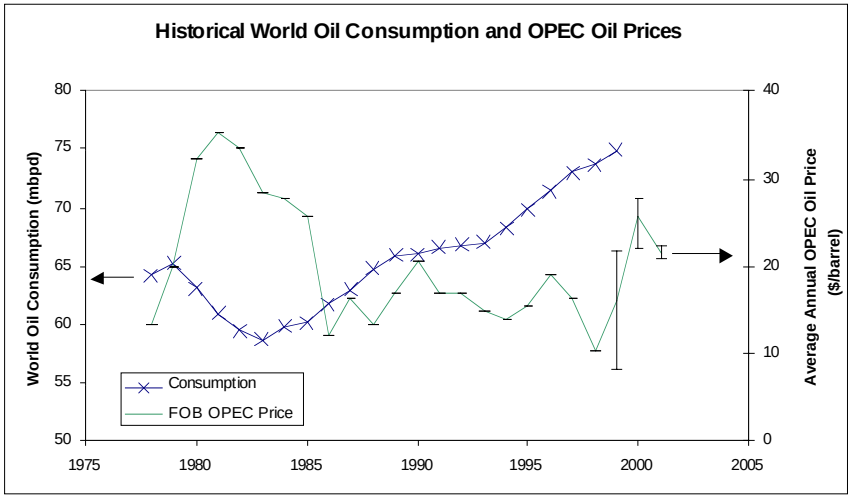
The California Legislature (AB2076, Shelley) requires the California Energy Commission (CEC) and the California Air Resources Board (ARB) to develop and adopt recommendations on a California strategy to reduce petroleum dependence. The legislation also requires CEC to forecast gasoline and diesel use in 2010 and 2020. Strategies to be considered include the addition of new sources, improved vehicle efficiencies, alternative fuels and advanced transportation and vehicle technologies.

California's refining industry is running at or very near capacity, producing about 17 billion gallons of gasoline and diesel fuel per year for on-road consumption. The demand for refined products could reach as much as 27 billion gallons by 2030. This increase in demand can be met by expanding the refineries in California or by importing refined or finished products into California. Currently, there is an excess world refining capacity, and no new refineries are expected for 5 or more years. California will be importing refined products to meet its growing demand.

Other possible strategies to meet California's fuel demand are the accelerated introduction of more efficient cars and trucks and use of non-petroleum or alternative fuels (either as neat or as blends in petroleum fuels). The CEC and ARB have developed a program and methodologies to evaluate and analyze these possible options. The Staffs are evaluating the costs associated with implementing these strategies that reduce petroleum in the context of the increasing projected number and use of cars and trucks.

The potential benefits of reducing petroleum use include fewer emissions and greater fuel savings to the consumer. Reducing the demand for oil may also decrease the economic impacts to California. World oil prices have been "relatively" stable over the last 15 years even with increased consumption. Refinery outages, resource depletion, geopolitical events may affect fuel price volatility and supply availability in the future.





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Agencies Roles

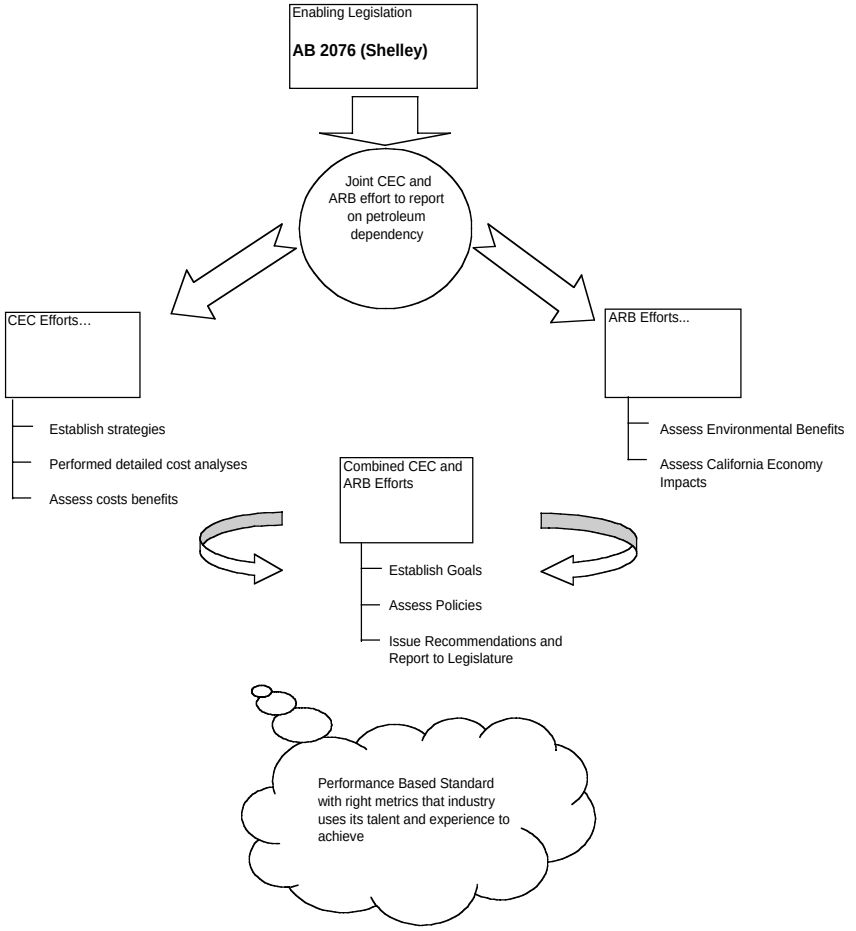
The CEC and the ARB Staffs are working together to develop a methodology to assess California's dependency on petroleum and to recommend to the Governor and Legislature possible ways to reduce this dependency. The goal of this effort is to provide policy makers with a robust analysis of the possible measures that could be implemented to meet the fuel demands of consumers and industry. This analysis needs to account for the costs of these measures as well as the benefits.

The CEC Staff is using its expertise and building on past efforts to evaluate possible strategies and perform detailed cost-benefit and petroleum impact analyses.

The ARB Staff is using its expertise to evaluate the emissions and economic impacts of petroleum reduction strategies.

The combined efforts are being integrated to assess possible petroleum reduction goals for California. Policies to achieve these goals will be evaluated, and recommendations will be made to the Governor and Legislature.

It is the intent of both agencies for these policy recommendations to be translated into performance based goals. Industry can then determine the most cost-effective approaches to achieve these goals and can use technology innovation to gain competitive advantages in the market place.



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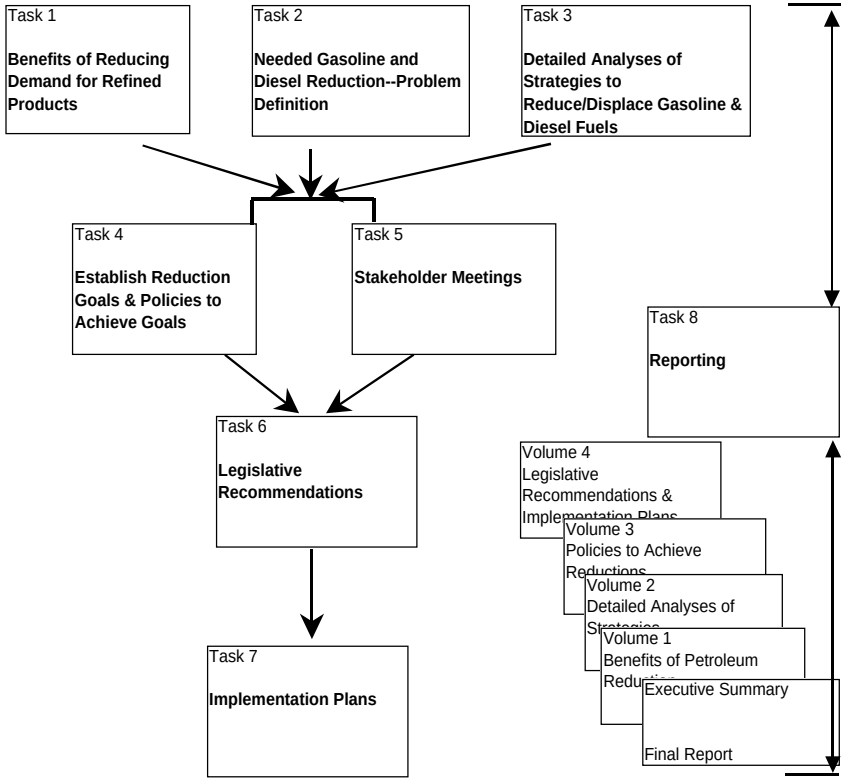
Work Breakdown and Task Structure

The CEC and the ARB Staff have developed a program plan to assess petroleum dependency in California. The work has been divided into eight tasks as indicated in the accompanying figure. The ARB leads the first task to determine the possible benefits of reducing the demand for gasoline and diesel fuel in California. The focus of this analysis will be on-road gasoline and diesel use. Other refined products such as jet fuel and off-road diesel fuels although important are not included in this analysis.

The second task is led by CEC to determine the future demand for refined products, especially gasoline and diesel fuels. The CEC will project or assemble projections for total personal income, population, Vehicle Miles Traveled (VMT), and demand for gasoline and diesel fuels. The CEC will also forecast prices for petroleum and refined products. While the CEC's forecast methodology looks forward to 2020, the CEC will also extrapolate the future trends out to 2030.

The CEC also leads the effort on Task 3. The objective of this task is to assess possible strategies to reduce petroleum dependency and to determine the level of petroleum reduction and costs. The CEC will use existing tools to determine fuel reductions and overall costs and benefits. The CEC will consider not only the cost to the user but also any costs to implement the strategy.

The CEC and the ARB will integrate the results of Tasks 1, 2, and 3 to assess strategies to reduce or displace fuel use. Staff will assess these strategies and provide recommendations to industry for their input. This effort will then lead to establishing statewide petroleum reduction goals and possible policies to achieve these goals. Ultimately, recommending statewide goals and strategies will be the responsibility of the ARB Chairman and the two CEC Commissioners represented on the Fuels Committee, who will present them for Board and full Commission consideration.



Task 6 and 7 will provide legislative recommendations and outline a series of implementation plans. Task 8 will provide reporting on each of the major tasks in the Program Plan.

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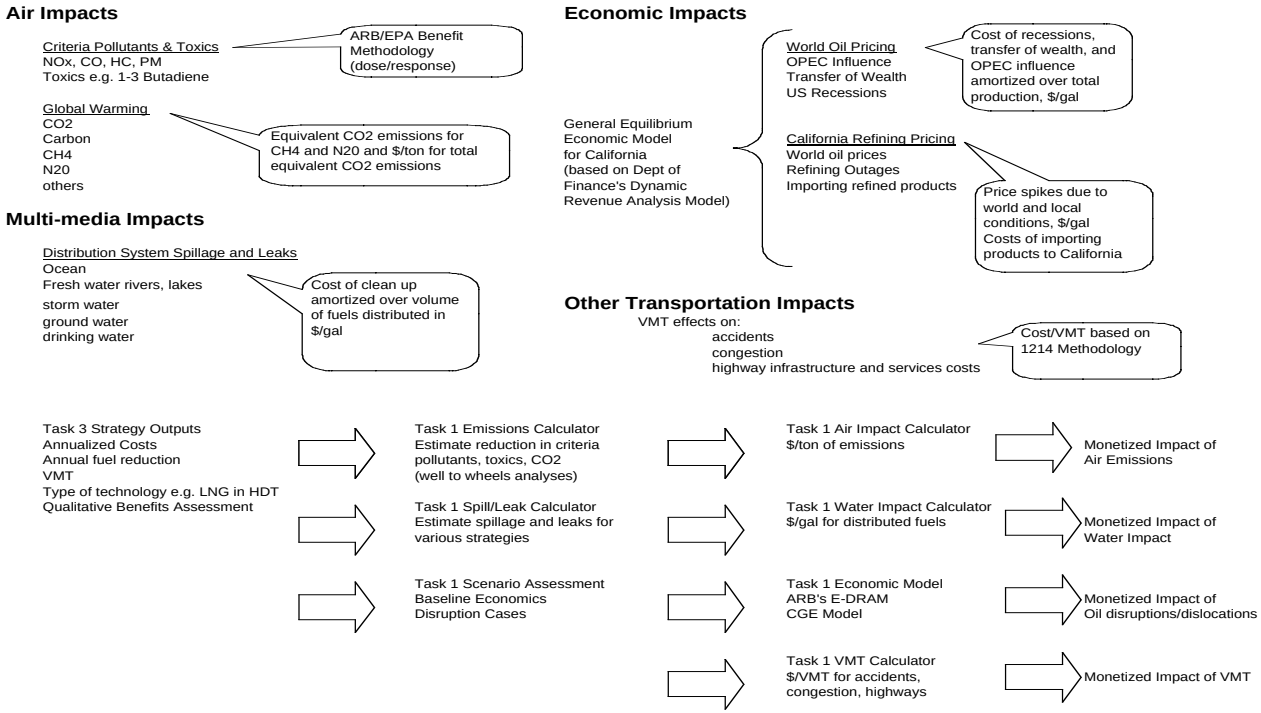
ARB Estimate of Environmental and Economic Benefits

The ARB Staff is responsible for estimating the environmental and economic impacts of strategies to reduce petroleum dependence. Staff will be assessing the air and water quality impacts, multi-media impacts, and the economic impacts of petroleum use. The ARB Staff will also assess the impacts of fuel spillage. Costs of clean up will be assessed and determined on a per gallon basis.

Emissions or other impacts will be determined and monetized based on accepted methodologies used by the ARB and the U. S. Environmental Protection Agency to set emissions standards. Air impacts include criteria pollutants and toxic emissions as well as global warming or greenhouse gases.

Economic impacts will be determined using the Department of Finances general equilibrium economic model of California. This model will be modified to account for projected Gross State Product, and fuel uses in 2020 and 2050. Sensitivity analyses will be performed to assess the effects of petroleum dependency, oil prices, and the prices of gasoline and diesel fuel.

Finally, ARB will also investigate the possible negative impacts of reducing the cost of vehicle ownership due to lower fuel consumption. This assessment will include the effects of higher vehicle miles traveled (VMT) on emissions, accidents, congestion, and highway infrastructure and services costs. The figure below shows the various steps to determine the benefits of reducing petroleum use in California.



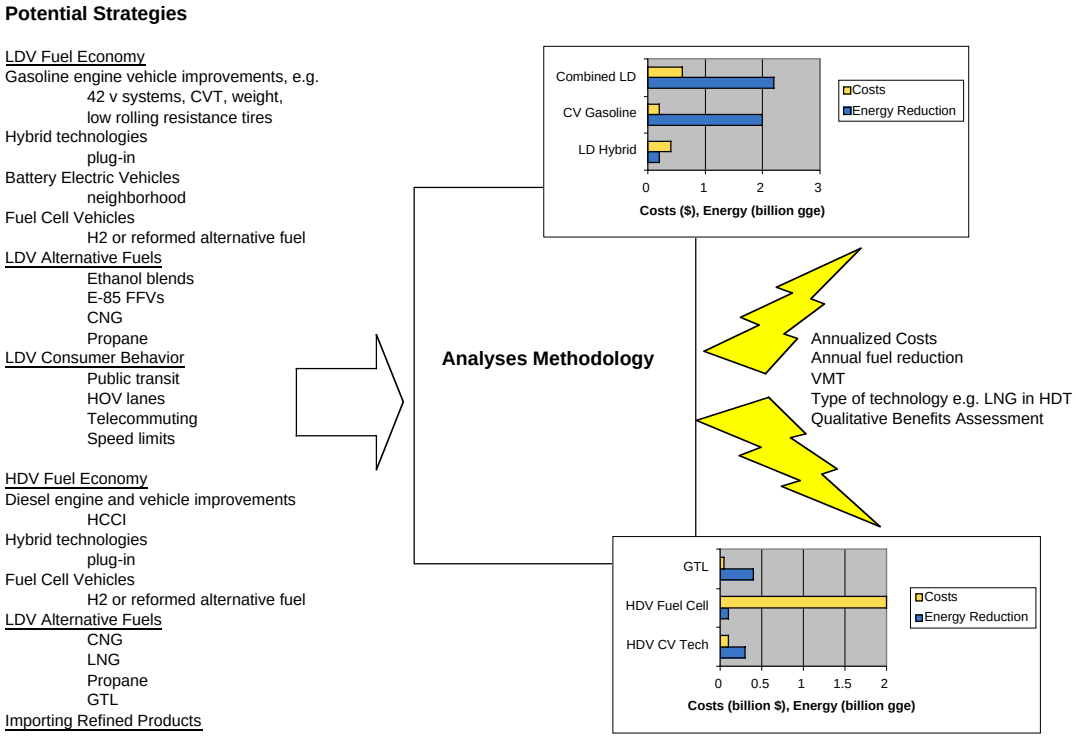
CEC Assessment of Strategies and Costs

The CEC Staff is evaluating a variety of strategies that could reduce petroleum use in California. These strategies include higher efficiency vehicles, alternative and non-petroleum fuels, advanced vehicle technologies, and changing consumer behavior through pricing measures and other means. The CEC will evaluate these measures for passenger cars and light trucks as well as heavy-duty vehicles.

For measures related to light duty vehicles, the CEC will use the CALCARS model to determine market penetration of vehicle fuel efficiency and pricing measures. This model will also provide estimates of the net present value of consumer benefits, expressed annually and through 2020. Estimates will also be made for 2030.

The CEC will use simplified spreadsheet analyses for all other strategies. These models will account for possible benefit from fuel savings, and will itemize the costs of technology and the costs of implementation.

Sensitivity analyses will be performed to estimate the possible range of costs and fuel reduction impacts for each potential strategy. Relative ranking of the effectiveness of the various measures will be evaluated based on the range of costs and potential petroleum reduction impacts.



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Program Milestones

All work on this project will be completed by April 30, 2002[1]. The major task elements and planned milestones are shown in the accompanying table.

The CEC and ARB Staffs held a workshop in September 2001 to bring together industry experts on possible strategies to reduce petroleum use in California. (For copies of transcripts and other documents, go to *www.energy.ca.gov/fuels/petroleum_dependence.)* Presentations were provided on transportation energy efficiency measures, advanced vehicle technologies, non-petroleum and alternative fuels, and measures that effect consumer fuel use. This information was incorporated into the analyses performed by the CEC on potential strategies to reduce petroleum use. Staff will complete this work by the end of 2001 with a report issued on January 31, 2002.

The CEC and the ARB will hold a second workshop on January 16, 2002 to review the "base case" demand forecast for California as well as expected price trends for oil and refined products. The CEC will also review the preliminary results of their analyses of petroleum reduction strategies.

The ARB benefit analysis will be completed in mid-February with a final report completed by March 30, 2002. The ARB work and analyses will be peer reviewed by experts from the University of California.

The CEC and ARB will integrate the results of CEC's cost assessment and ARB's benefit assessment to develop petroleum reduction goals and potential policies. CEC and ARB leadership will take an active role in developing these goals and policies and will work to get industry feedback. Both agencies will make recommendations to their respective governing bodies and then to the Governor and Legislature.

The draft of the final report will be issued on April 5, 2002 with the final provided to the Governor and Legislature on April 30, 2002.

No.	Description	Date
1	Hold Petroleum Reduction Strategies Workshop	September 17-18, 2001
2	CEC Strategy Analyses Complete	December 31, 2001
3	CEC Strategy Report Complete	January 31, 2002
4	Workshop on "Base Case" Demand Forecast and Presentation of CEC's Preliminary Analyses of Petroleum Reduction Strategies	January 16, 2002
5	Workshop of Global Warming/CO2 Emissions-Benefits and on Program Goals and Strategies	Mid-February 2002
6	Goals and Policies Complete	March 15, 2002
7	ARB Benefit Analyses Report Complete	March 30, 2002
8	Draft Final Report for Review	April 5, 2002
9	Joint ARB Board and CEC Commission Adoption Hearing	April 25, 2002
10	Submittal of Recommendations to Legislature	April 30, 2002

[1] This is a 90 day extension provided by the Honorable K. Shelley (author of AB2076) to further study the effects of reduce petroleum dependency in light of the events on September 11, 2001.